Java Tutorial

Designed by

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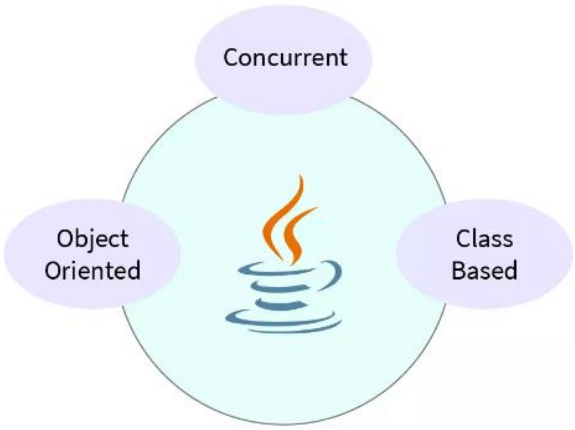
Introduction

Java is a programming language that James Gosling developed at Sun Microsystems_Inc in the year 1995, which later on was taken into possession by the Oracle Corporation in 2009.

- We can call it a high-level (makes the development of programs easy and much more user-friendly) programming language which makes it very convenient for us to write, compile and debug Java programs.
- Java is a class-based object-oriented programming language that implements the principle of write once code anywhere.
- Since Java applications are compiled to byte-code, they can run on any JVM-supported machine.
- Java codes are very similar to C/C++, which makes them easier to understand.



Why Use Java?

As mentioned above, Java is a high-level language and should be studied if you want to know the basics of programming. Let us learn why there is a need to learn the language.

1) Object-Oriented

2) Portable

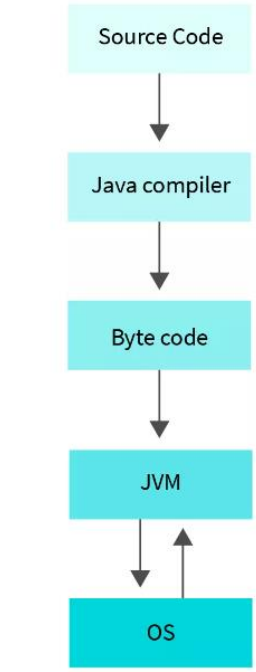
3) Simple

4) Secure

5) Robust

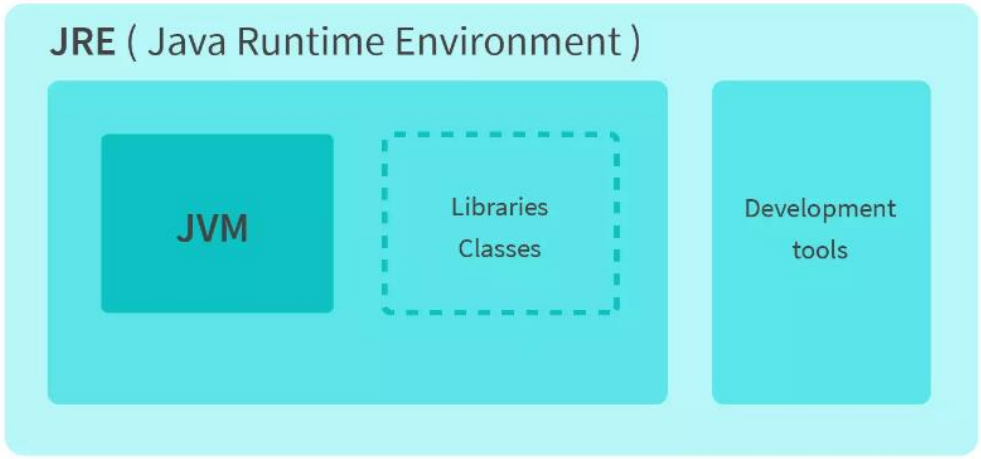
6) Platform Independent

7) Architecture neutral



Java Development Kit (JDK)

As the name formally states, Java Development Kit is a full-time kit that has a compiler, Java Runtime Environment(JRE), Debuggers, and Java documents included in it. For further execution in java, we need to have JDK installed on our computers to further lead to the creation, compilation, and running of the java program.



Java Run-time Environment (JRE)

JDK includes JRE, which, in turn, after installation, allows the Java program to run. But we still can't compile it. It has a browser, the applet supports, and a few plugins included in it. So, to run a java program on your respective computers, you need JRE.

JRE is made up of multiple elements altogether, and they are:

- Java virtual machine (JVM)
- Java class libraries
- Java class loader

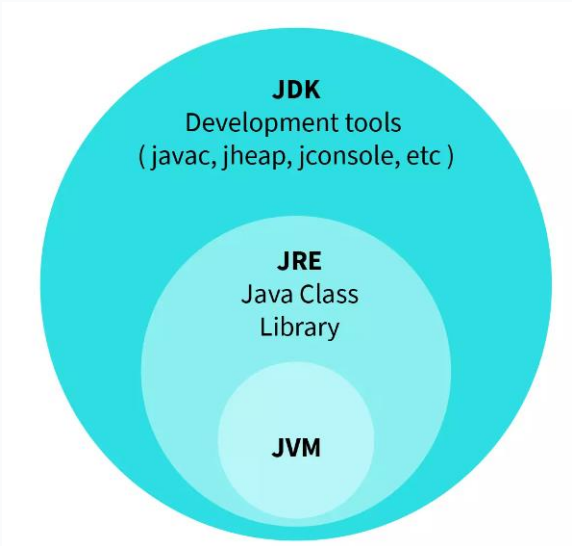
Java Virtual Machine (JVM)

This generally is referred to as JVM and contains three phases that we have to follow. It is a very important part not only of JDK but also JRE as it is inbuilt in both of the places. When you run a program using the JRE and JDK, it also goes to the JVM as it is required to run the java program and interprets the program. The phases are as follows:

Compile the Code: The Java Development Kit(JDK) provides us with the JAVAC compiler to get through this step. We basically

require the JDK to convert our source code into a specific format (compiled code) that can be easily interpreted by the Java Runtime Environment(JRE).

Run the Code: JVM runs the bytecode provided by the compiler. Since Java is a platform-independent language, the compiled code produced by the JAVAC compiler is converted to machine code using platform specific JVMs. Different platforms have different JVMs. JVMs convert the bytecode into platform specific machine code.



Overview

Java is a class-based object-oriented simple programming language. Though we can not consider it to be fully object-oriented as it supports primitive datatypes. It is a general-purpose, high-level programming language that helps programmers and developers to write a code once and run it anywhere.

Java is considered both a compiled and interpreted language. It is because Java source code is first compiled to bytecode which is

then interpreted by Java Virtual Machine. Java Virtual Machine interprets the bytecode and converts it to platform specific machine code. Hence, Java is also called a platform-independent programming language.